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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/047,437	10/23/2001	Masayuki Kumazawa	M2047-25	2953

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EXAMINER	
ADHAMI, MOHAMMAD SAJID	
ART UNIT	**PAPER NUMBER**
2662	

DATE MAILED: 01/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/047,437	KUMAZAWA ET AL.	
	Examiner	Art Unit	
	Mohammad S. Adhami	2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 October 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-10 and 12-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *16-18* is/are allowed.

6)☒ Claim(s) *2-6,10,12-15* is/are rejected.

7)☒ Claim(s) *7-9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 October 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

- Applicant's Amendment filed 10/21/2005 is acknowledged.
- Claims 2-10 and 12-17 have been amended.
- Claims 1 and 11 have been cancelled.
- Applicant's response and amendment with respect to the first action objection of claims 16 and 17 is noted and the objection for claims 16 and 17 are withdrawn.
- Applicant's response and amendment with respect to the first action rejection of claims 5-9 under USC 35 112-1st paragraph is noted and the rejection is withdrawn.
- Claims 2-10 and 12-18 are pending

Claim Objections

1. Claim 8 is objected to because of the following informalities:

Re claim 8:

The language "to return to the original priority the priority of each of said plurality of queues" is confusing. It is suggested that the language be changed to "to return the priority of each of said plurality of queues to the original priority."

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 2-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chapman (US 6,628,609) in view of Appanna (US 6,678,244)

Re claim 2:

Chapman discloses "a plurality of queues" (Col. 3 lines 51-52 "the creation of one or more queues").

Chapman further discloses "a packet transmitting unit operable to extract a packet from any one of said plurality of queues, thereby transmitting the extracted packet" (Col.3 lines 6-11 "each output port capable of releasing data units from said switch" and Col. 4 lines 6-9 "The bandwidth control mechanism...requests release of the data packet from the queue to the switch fabric").

Chapman further discloses "a packet receiving unit operable to receive a packet that has arrived" (Col. 3 lines 4-5 "each input port capable of receiving data units").

Chapman further discloses "a classifying device operable to transfer the packet transferred...to any one of said plurality of queues in accordance with a priority of the packet transferred" (Col. 10 lines 29-38 "the local controllers are responsible for the data handling and queuing...is responsible for supporting priority").

Chapman does not disclose "a transferring unit operable to transfer the packet received at said packet receiving unit", "a controlling unit operable to judge whether said plurality of queues is in a congestion state or in a non-congestion state", and "wherein said transferring unit is further operable to alternatively transfer the packet received by said packet receiving unit directly to any one of said plurality of queues in the non-congestion state and transfer the packet received by said packet receiving unit to said classifying device in the congestion state."

Appanna discloses "a transferring unit operable to transfer the packet received at said packet receiving unit" (Col.2 lines 48-50 "The transmission of data packets from the queuing node is then stopped and packets received at the queuing node are queued" where the queuing node is a "transferring unit").

Appanna further discloses "a controlling unit operable to judge whether said plurality of queues is in a congestion state or in a non-congestion state" (Col.2 lines 44-48 "The method).

Appanna further discloses "wherein said transferring unit is further operable to alternatively transfer the packet received by said packet receiving unit directly...in the non-congestion state and transfer the packet received by said packet receiving unit to said classifying device in the congestion state" (Col.6 lines 5-11 "The Q-node...checks the downstream congestion notification flag prior to processing packets destined for the output interface. If the flag indicates that the internal data path is not congested, the Q-node allows a packet

stream to pass through with minimal delay, or emits a previously queued packet. If the notification flag indicates congestion, the packet is queued according to a predefined flow policy" where during non-congestion the packet is sent directly to a driver queue as explained in Col.6 lines 41-57 and the Q-node serves as both the "transferring unit" and the "classifying device" as shown by the Q-nodes ability to transfer packets to the transmit queue and to queue packets according to predefined flow policy, which is based on classifications).

Chapman and Appanna are analogous because they both pertain to data communication.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Chapman as discussed above as taught by Appanna in order to reduce the packet processing time.

Chapman does not explicitly disclose "transfer[ing] the packet received by said packet receiving unit directly to any one of said plurality of queues in the non-congestion state."

Re claim 3:

Chapman discloses "packet transmitting unit includes a referring unit operable to refer to a priority of each of said plurality of queues and a transmitting unit operable to transmit a packet from a queue having a higher priority" (Col. 5 lines 6-9 "The switch fabric controller recognizes the low priority status and will allow the release of a low priority data packet only when there are no other high priority data packets to send").

Re claim 4:

Chapman discloses "transferring unit is further operable to transfer the packet received by said packet receiving unit directly to a queue having the highest priority among said plurality of queues in said non-congestion state" (Col.4 lines 49-52 "while the average bandwidth usage is below or equal to the bandwidth fraction...during which time traffic is release with high priority").

Re claim 5:

As discussed above, Chapman meets all the limitations of the parent claim.

Chapman does not explicitly disclose "wherein said controlling unit is operable to judge that said plurality of queues is in the congestion state when a queue length of a queue having the highest priority among said plurality of queues is at least a fixed threshold value."

Appanna discloses "wherein said controlling unit is operable to judge that said plurality of queues is in the congestion state when a queue length of a queue having the highest priority among said plurality of queues is at least a fixed threshold value" (Col. 1 lines 60-63 "various measurements may be used to monitor network congestion such as...average queue length" and Col.6 lines 43-45 "Once the count reached a predetermined upper limit, the transmit manager...will set its congestion notification flag").

Chapman and Appanna are analogous because they both pertain to queuing data.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Chapman as discussed above as taught by Appanna in order to prevent overflow and loss of packets).

Re claim 6:

As discussed above, Chapman meets all the limitations of the parent claim.

Chapman does not explicitly disclose "wherein said controlling unit is further operable to judge that said plurality of queues is in the non-congestion state when the priority of said plurality of queues is regularly constant and all of said plurality of queues are empty."

As is well known in the art, empty queues are in a non-congestion state.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Chapman as discussed above because by definition a non-congestion state is when the queue is not full, thus having empty queues would be determine a non-congestion state.

3. Claims 10,12,14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olsson (US 6,577,596) in view of Appanna.

Re claim 10:

Olson discloses "establishing at least first and second queues" (Col. 4-5 lines 67,1 "packets may be queued in a first and a second queue).

Olson further discloses "extracting a packet from at least one of the first and second queues, thereby transmitting the extracted packet" (Col.7 lines 42-46

"Outbound packets...may then be transferred to the physical layer...where they can be processed in FIFO transmit queue...and output to physical link" where output to physical link is transmitting the extracted packet).

Olson further discloses "receiving a packet that has arrived" (Col.6 line 23 "a receiver").

Olson further discloses "transferring alternatively the received packet directly to any one of the first and second queues in the non-congestion state" (Col.4-5 lines 67,1 "packets may be queued in a first and a second queue").

Olson further discloses "transferring the received packet to any one of the first and second queues by classifying the received packet in accordance with a priority of the packet in the congestions state" (Col. 6 lines 60-62 "During periods of congestion it is often the case that packets awaiting transfer must be scheduled or queued" and Col. 5 lines 1-3 "scheduling...according to...classifications, the first queue having priority over the second queue").

Olson does not explicitly disclose "judging whether at least one of the first and second queues is in a congestion state or in a non-congestion state."

Appanna discloses "judging whether at least one of the first and second queues is in a congestion state or in a non-congestion state" (Col. 2 lines 44-47 "The method generally includes monitoring congestion...and setting a bit within a congestion notification flag...when the node is congested").

Olson and Appanna are analogous because they both pertain to queuing data.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Olsson as discussed above as taught by Appanna in order to be able to adjust packet queuing and allow high priority data to be transmitted when congestion occurs.

Re claim 12:

Olsson discloses referring to the priority of the first and second queue to determing the higher priority queue, and then transmitting packets from the higher priority queue (Col. 7 lines 30-32, 38-41 "high priority packet...may be placed in high priority queue" and "Outbound packets...are sent...according to priority with high priority outbound packet...being sent first").

Re claim 14:

As discussed above, Olson meets all the limitations of the parent claim.

Olsson does not explicitly disclose "judging judges that said at least one of first queue and said second queue is in the congestion state when a queue length of a queue having a highest priority among said at least first and second queues contains at least a fixed threshold of packets."

Appanna discloses "judging judges that said at least one of first queue and said second queue is in the congestion state when a queue length of a queue having a highest priority among said at least first and second queues contains at least a fixed threshold of packets" (Col. 1 lines 60-63 "various measurements may be used to monitor network congestion such as...average queue length"

and Col.6 lines 43-45 "Once the count reached a predetermined upper limit, the transmit manager...will set its congestion notification flag").

Olson and Appanna are analogous because they both pertain to queuing data.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Olsson to determine a congestion state based on queue length as taught by Appanna in order to prevent overflow and loss of packets.

Re claim 15:

As discussed above, Olson meets all the limitations of the parent claim.

Olsson does not explicitly disclose "judging judges the non-congestion state when all of said at least first and second queues are empty."

As is well known in the art, empty queues are in a non-congestion state.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Olsson in view of Appana to define a non-congestion state as a state where the queues are empty because by definition a non-congestion state is when the queue is not full, thus having empty queues would be determine a non-congestion state.

4. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Olsson in view of Appanna as applied to claim 11 above, and further in view of Chapman.

Re claim 13:

As discussed above, Olsson meets all the limitations of the parent claim.

Olsson does not explicitly disclose "in a non-congestion state, directly transferring a received packet to a queue having a highest priority among said at least first and second of queues."

Chapman discloses "in a non-congestion state, directly transferring a received packet to a queue having a highest priority among said at least first and second of queues" (Col. 4 lines 49-52 "while the average bandwidth usage is below or equal to the bandwidth fraction...during which time traffic is release with high priority").

Olson and Chapman are analogous because they both pertain to data transmission.

It would have been obvious to one of ordinary skill in the art at the time of the invention modify Olsson in view of Appanna to include directly transmitting a packet to the highest priority queue in a non-congestion state as taught by Chapman, in order to reduce the delay in transmitting a packet.

Allowable Subject Matter

5. Claims 7-9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. Claims 16-18 are allowed .

7. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not show or fairly suggest "switching a priority of a .

queue having a highest priority prior to being switched to a lowest priority when an entire length of all of said at least first and second of queues does not exceed a fixed threshold, wherein when all queues except said queue having said lowest priority are empty in this state, said judging judges that at least one of said first queue and said second queue is in the non-congestion state."

Response to Arguments

8. Applicant's arguments filed 10/21/2005 have been fully considered but they are not persuasive.

- In the Remarks on pg.9 of the Amendment, Applicant contends that the amended claim 16 addresses the objection.
- The Examiner respectfully disagrees. The language for claim 16 remains confusing.

- In the Remarks on pg.11 of the Amendment, Applicant contends that Appanna does not disclose or suggest bypassing a downstream classifying device.
- The Examiner respectfully disagrees. The Q-node contains a classifying device as evidenced in Col.6 lines 6-11 "If the flag indicates that the internal data path is not congested, the Q-node allows a packet stream to pass with minimal delay, or emits a previously queued packet. If the notification flag indicates congestion, the packet is queued according to a

predefined flow policy." Queuing packets according to a predefined flow policy is synonymous with classifying packets, thus the Q-node contains a classifying device. The packet classification node that Appanna discloses as being upstream from the Q-node sets the parameters. However, the actual classifying is done at the Q-node. Additionally, when there is no congestion, the "classifying device" within the Q-node is bypassed.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Simpson (US 6,493,315) shows queuing packets during a non-congested state.

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohammad S. Adhami whose telephone number is (571)272-8615. The examiner can normally be reached on Monday-Friday 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (571)272-3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MSA 1/6/2006

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